- Recommendation for who should be assigned ultimate responsibility and accountability for initiative

6. Steering committee will review report from technology department(s) and decide whether or not to implement
7. If initiative is accepted and committee agrees to implement, determinations will be made for:
   - When to implement (priority order)
   - What in initiative should be district supported and what site specific
   - Sources for funding: district, sites, grants, entitlements, partnerships
8. Budget allocation will be determined
9. Leadership responsibility and accountability for successful implementation will be assigned
10. Committee will evaluate effectiveness of initiative reaching pre-determined goals after first year and revisit each year for three years

Graphic illustrating members and key process of TSC – Click here.

Aurora Public Schools has adopted the most current version of the National Educational Technology Standards for Students. The standards were created by the International Society for Technology in Education (ISTE). Aurora Public Schools believes that all students should acquire the necessary skills to be productive in the global world. Students must meet these standards in order to be technology literate. Educational Technology and Information Literacy is the ability to use digital technology, communication tools and networks to expand creativity, solve problems and improve thinking and learning in an information society. The technology and information literate student is able to use technology as a tool to research, organize, collaborate, evaluate, create, and communicate with an understanding of the ethical and legal issues surrounding the access and use of information. The skills identified in each standard were either adapted from other school districts or developed by the work of the elementary and middle school business and technology curriculum council.

Specific skills and behaviors were identified for each of the six standards for students in kindergarten through eighth grade. Students should be technology literate by the time they reach high school. The primary purposes for developing these skills were to:

1. **Support all staff that instructs students in a technology lab or library. The following standards can be used as a guide to support instruction and learning.**
2. **Guide professional development for staff knowing that if we expect students to acquire a specific skill in a grade level then a teacher should know how to do this also as a minimum expectation.**
3. **Prepare students for a technology literacy assessment by the end of the eighth grade and to meet requirements for NCLB. This school year, 2007-2008 will be the first year for the assessment.**
4. **Support the goals and actions of VISTA 2010 in the areas of Achievement and Environment.**

This document will be considered a work in progress and the next steps will be to develop projects and lesson plans that align with the standards and the district pacing guides. This will help to ensure that educational

technology and information literacy is integrated into instruction. The technology and business curriculum council will continue this work this year. In order to accomplish the vision and goals of the Educational Technology Information Literacy (ETIL) Plan adopted by Aurora Public Schools:

> We believe all students can learn, and we are committed to preparing learners who value themselves, contribute to a global community and succeed in the international work place. **Skilled people in the 21st century must understand how to use information and communication technologies as the demand for information and technologically literate citizens continues to increase dramatically.** Expertise in the use of technology supports students in developing these skills by allowing them to pursue topics in depth and at times become experts in charge of their own learning. In order to take full advantage of the vast array of research and multimedia resources, digital content and communications options available to them, students must begin developing this expertise in the early grades. To that end we believe students must be able to:
>
> - think critically
> - apply knowledge to new situations
> - comprehend new ideas
> - analyze information
> - communicate their understanding
> - collaborate
> - solve problems and make decisions
>
> In support of the role of technology in the educational process, Aurora Public Schools will integrate educational technology and information literacy into curriculum and instruction to increase student achievement and meet district, state, and national standards.

The Division of Accountability & Research, provides development of district, site and classroom assessments, and coordinates the assessment of student learning. Through a variety of media, the Division of Accountability & Research analyzes data and reports the results to the Superintendent, Board of Education, administrators, State and Federal agencies, district stakeholders and the general public. A major focus is the implementation of the district assessment plan to support the VISTA 2010 plan and providing necessary staff development that assists the district in developing best next steps for increasing student achievement. The Division supervises technology "trials" to determine effectiveness of technologies brought into the classroom. There have been a number of "trial's" in APS related to technology and examples include: 1:1 Laptop effectiveness in high school literacy classrooms and impact of intervention software programs on student achievement.

APS is also dedicated to examining current research trends to learn from and to apply to our own processes. Research comes from a variety of sources including district staff; electronic resources; consultants; and technology vendors.

Section D: Professional Development

The Vista 2010 Plan [http://www.aps.k12.co.us/supt/plan/council/index.htm] provides the framework for transforming the Aurora Public Schools into the premiere school district in the state of Colorado. The quality of a student's instruction has the largest effect on his/her achievement and continually improving every staff member's effectiveness is a priority in our district. We believe that the achievement of each and every student can be brought to the highest level through the following transformational goals:

- Ensure all employees are highly qualified and skilled for their positions
- Develop and nurture a professional culture of leadership, integrity and creativity throughout the district

Aurora Public Schools Professional Development seeks to provide every educator with opportunities to become an even more effective agent for success for our students. By promoting opportunities for study within our own district, through universities in our area, and through online learning, we seek to match our talented staff with professional learning experiences that will transform their instruction.

Aurora Public Schools Professional Learning seeks to provide every educator with opportunities to become an even more effective agent for success for our students. By promoting opportunities for study within our own district, through universities in our area, and through online learning, we seek to match our talented staff with professional learning experiences that will transform their instruction. The Department's theory of action is building the capacity of individuals along a Leadership Succession Continuum in order to develop the more knowledgeable other. The Continuum provides a systematic, long-term plan for developing individuals at each position along the continuum - new teacher, mentor teacher, teacher leader, district coach, principal, academic officer, and superintendent. Professional learning opportunities provide participants with common understandings about teaching, learning, and leadership. The Professional Learning Plan provides for systematic support that is job-embedded; and includes peer and one-on-one coaching. The implementation of knowledge and skills from District conferences, workshops and courses, is monitored at the school site by administrators, district coaches, and teacher leaders. The professional learning for these coaches and teacher leaders is collaborative among regular education, special education, English as a Second Language, and technology coaches. This cohesive framework for learning and instruction is evident in the language and actions demonstrated by educators in Aurora Public Schools.

The professional development for the ETIL Plan will be maintained by the Instructional Technology Department. The professional development on both curriculum enhancement and equipment usage will be continually supported throughout the district as this plan is integrated into all APS curriculum and standards instruction.

Section E: Technology Infrastructure and Support

This section is designed to address planning for the physical technology infrastructure required for the district to deliver ET-IL services. This includes elements of hardware, software, telecommunications services, and staffing needed to support the ET-IL program and subsequent technology infrastructure. The key elements of technology infrastructure are outlined below. Your district may have additional items that need to be included in your ET-IL plan based on local initiatives. Please remember that services that are requested on the Form 470 used in the E-Rate application process need to be reflective of the ET-IL plan.

Telecommunications Capacity
Telecommunications Services
Equipment Access for Curriculum Support
Equipment Access for Instruction, Including Assistive Technologies
Equipment Access for Data and Assessment
Equipment Access for Delivery of Library Services, Including Assistive Technologies
Network and Data Security
Level of Technology Staff Support
Internet Access Capacity

Guiding Questions:

Describe your basic technology infrastructure. Include telecommunications.

Hardware

APS has over 13,000 workstations (2.54:1; student: computer ratio). The District has standardized on Dell desktops and laptops. However, a small number (less than 200) of Apple computers have been purchased for specialized needs. Apple computers are not supported by the District's Technical Services Department, due to Apple's high support costs.

APS has more than 120 physical servers. Half of those servers are located at the District's sites, the other half are in the data center. A little less than half of the District's servers are running Novell Netware 6.5 on eDirectory. More than half of the servers are running various versions of Windows Server (2000-2003), a few servers and appliances are running various versions of Linux. The Windows servers are all stand-alone.

APS' current server deployment is mostly Dell Power Edge 2600 series equipment. More than 80% of the servers in APS are more than 6 years old. APS is currently in the process of planning a server refresh project that will roll out in conjunction with the Novell to Microsoft migration.

APS is in the process of planning a migration from Novell Netware to Windows Server and Active Directory. The goal of the migration is to eliminate Novell Netware from the District's production computing environment, and integrate AD to centrally manage all Windows servers. AD will also be used to centrally manage applications and authentication in APS.

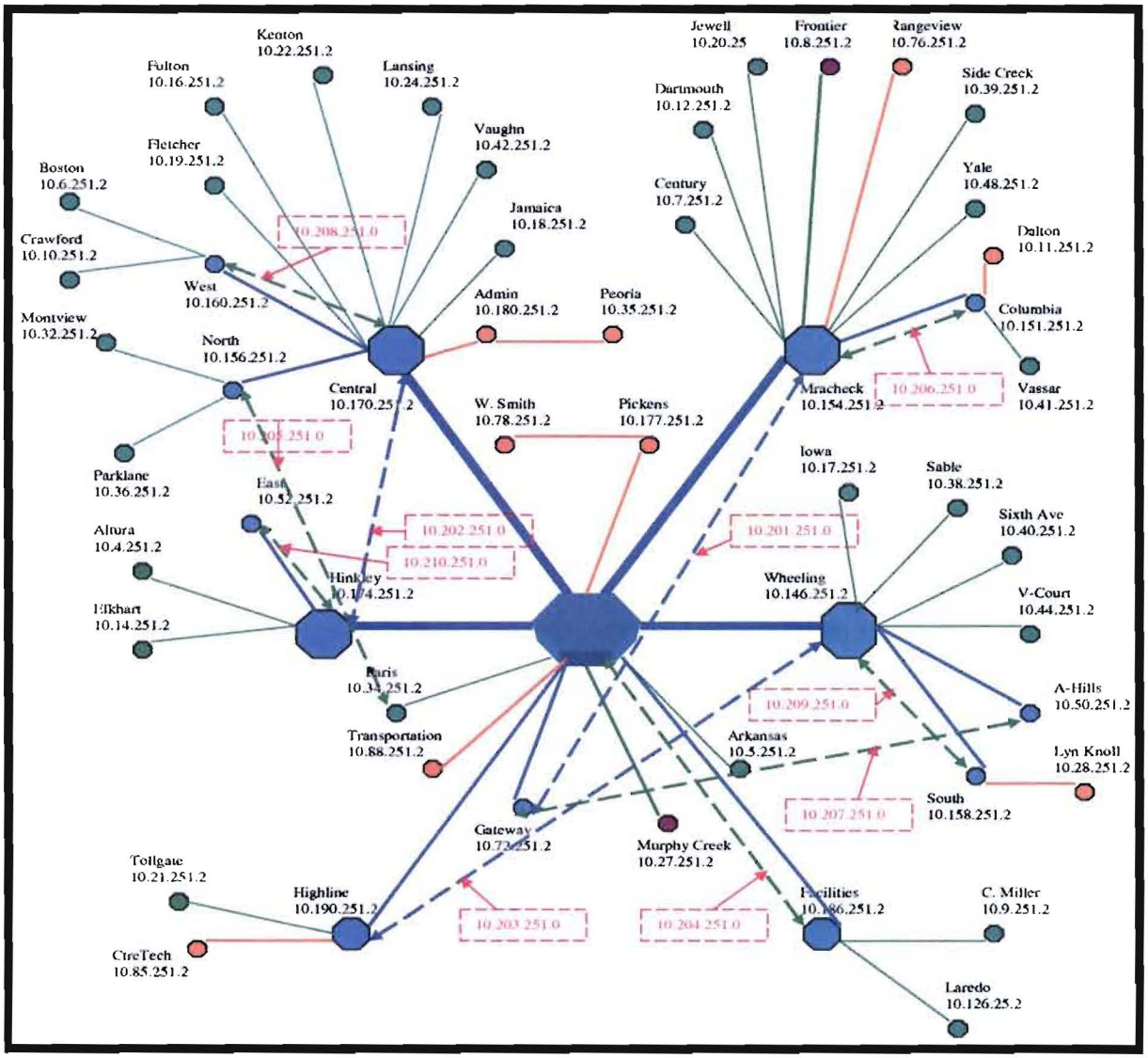
Internet Connection

The District's Internet connection is provided through Qwest's Metro Optical Ethernet (QMOE). At 200Mb/s, the current connection represents slightly more than 6Kb/second/student, which is close to the national average for K-12 districts and considered robust enough to handle both current and near-term Internet demands. As the demands of the District's ET-IL plan increase in the intermediate future, this connection will need to be increased.

The District's Fire-Walls provide content and URL filtering for APS students in addition to the standard packet inspection, routing, port filtering, and other security features. APS will need to upgrade its Fire-Walls in conjunction with the increases in Internet throughput.

• WAN Infrastructure

The WAN infrastructure consists of point-to-point microwave radio links arranged in a geographically hierarchical topology. The connection is fast enough to allow for centralized back-up (with compressed synthetic full backups performed on the remote server) and some low-bandwidth centralized applications. The Microwave radio links to each site vary in speed from ~5Mb/s – 310Mb/s, but the licensed 155Mb/s and 310Mb/s links are aggregation points for other sites.



APS is in the process of upgrading its WAN to home-run 1Gb/s fiber from each site currently connected with microwave radio. The 1Gb/s connections will terminate at each site, and connect directly back to the APS data center providing a maximum theoretical throughput of 48Gb/s district-wide.

• **LAN Infrastructure**

All district locations have Category 5e (Cat5e) structured cabling systems installed, with a minimum of one 4-port outlet which allows for data and phone connections in every classroom. All layer 3 traffic is handled by layer 3 switches instead of routers. This allows for significantly higher performance and allows for the use of VLANs, which in turn allows for more devices to be connected. Wireless access points and controllers at all sites provide wireless coverage throughout the District.

• **Telecommunication Network (Voice) Infrastructure**

The current voice infrastructure at APS is a classic architecture employing equipment manufactured by NORTEL Networks. APS has centralized NORTEL Call Pilot voice mail system. Qwest Communications serves as the carrier for domestic and international long distance calling. APS also leases several thousand Direct Inward Dial (DID) numbers from Qwest which we use for direct access to phone extensions, FAX machines, and teacher voice mailboxes. APS has the capacity for a telephone is every classroom.

Identify what you will need to do to provide adequate telecommunications capacity to meet ET-IL and district program needs.

Telecommunications Infrastructure

The District last replaced its phone system in 1993, making the current system 15 years old. Fifteen years is a normal life span for phone equipment, and failure rates on the current hand sets are increasing as the fleet ages. The District also intends to migrate to Voice-over IP (VOIP) within the next three years, which will allow the District to transmit phone calls over the Wide-area Network and save money on third-party phone lines. Although evaluation is still in its early stages, it is possible that the District will move to computer-based IP telephony in lieu of traditional handsets as a means of improving telecommunications functionality.

1. Describe your basic telecommunications services.

The current voice infrastructure at APS is a classic Time Division Multiplexing (TDM) architecture employing equipment manufactured by NORTEL Networks (NORTEL). At the core of the network at the Business Center is a NORTEL Option 81C PBX with a centralized Call Pilot voice mail system. From the Option 81C system there are six (6) ISDN PRI circuits connected to the Public Switched Telephone Network (PSTN) via our local exchange carrier, Qwest Communications. Qwest Communications serves as our Inter-Exchange Carrier for Domestic and International long distance calling. APS also leases several thousand Direct Inward Dial numbers from Qwest which APS use for direct access to phone extensions, FAX machines, and teacher voice mailboxes.

Nortel Option 11C PBX systems are installed at all other buildings in the District, in single or multi-cabinet configurations determined by the number of phone sets being supported at a site.

Connections to the Option 81C system at the Business Center are via a private ISDN Primary Rate Interface (PRI) circuit, over a T1 circuit leased from Qwest Communications. A 5-digit Coordinated Dialing Plan is implemented between District locations. Local analog hunt groups are also installed at each location for primary inbound calling, and outbound calling when a T1 outage necessitates it. Access to Public Safety Access Points (PSAP-911) is also accomplished via these local analog facilities.

Extensive use of Direct Inward Dial (DID) numbers is employed and is combined with a NORTEL switch feature known as Incoming DID Digit Translation. This feature allows us to view the incoming DID digits, compare them to an index, and convert them to an internal extension that is part of the Coordinated Dialing Plan. The

call is then routed to a desk extension, FAX machine, voice mailbox, or other phone network device needing direct termination.

2. Identify what you will need to do to provide adequate telecommunications, internet, and network services to meet ET-IL and district program needs.

Internet Bandwidth

As Internet bandwidth requirements increase, there will be a need to increase the District's Internet connection with Qwest. The District currently uses a tool called TrafficGrapher to monitor Internet and WAN utilization and will increase Internet speeds as the current connection becomes saturated. The resources on the District's firewalls are also monitored to ensure that APS' edge devices don't create a bottle-neck.

WAN Infrastructure

Bandwidth needs to meet the District's ET-IL and program needs are increasing exponentially. It is expected that the current microwave-based system will no longer meet those needs sufficiently within the next three years. As such, there is a need to expand bandwidth via the use of fiber-optic network connections.
The District built local funding into its 2008 bond and mill levy overrides to accomplish a comprehensive upgrade to fiber. The fiber network will allow 1 gigabit connections from each school to a central hub site (IT Center) and will be upgradable to 10 gigabits in the future as bandwidth needs continue to expand.

LAN Infrastructure

The wireless LAN Infrastructure (see description above) was originally designed to facilitate wireless access to a small number of staff members using District laptops. In the future, the District will require a proliferation of wireless student computer devices to meet the District's ET-IL and program needs. The wireless network will need to be expanded to provide not only complete coverage in each of the District's schools and buildings as exists now, but also sufficient saturation to meet student needs.

3. What infrastructure/services are needed to assure district curriculum support?

No additional infrastructure/services from those discussed above.

4. What infrastructure/services are needed to assure assistive technologies are identified, provided and supported?

No additional infrastructure/services from those discussed above.

5. What infrastructure/services are needed to support staff use of assessment and data tools?

The District will require additional server hardware to support assessment and data tools. The District's primary assessment tool, ICAM (a custom application built on Oracle's open-source APEX tool) currently has its own, dedicated server. However, it is expected that the District will need to invest in additional servers and data warehousing hardware/software in order to meet projected "Business Intelligence" needs.

6. What infrastructure/services are needed to support delivery of library information services? What infrastructure/services are needed to support network and data security?

Network and data security is provided by several infrastructure systems: firewalls, centralized backups, encryption, authentication, and password complexity policies.

The District's firewalls are currently configured for high-availability and fault-tolerance. They provide a secure barrier between the three distinct APS networks: Internet, internal, and public. That barrier is the mechanism we use to ensure that secure information isn't accessible from the public network or Internet, and hazardous data isn't accessible from our internal or public networks. In addition to providing a secure barrier, the firewalls also filter content that passes from the Internet to our public and internal networks. The filters are used to provide a safer surfing environment for students and staff.

The District's centralized backup system provides fast and reliable data recovery to help protect APS from accidental data loss and disasters. We've configured the system for disk to disk to tape backups. The tapes are transported to a secure offsite location for disaster recovery purposes. Backups are performed nightly from the remote server disks to a centralized disk storage system. Every morning, the backups are copied from the centralized disk storage to tapes, and the tapes are taken to a remote site for secure storage.

Encryption is utilized in several environments at APS. Wireless, systems monitoring and control, and confidential or sensitive information systems are all encrypted. The encryption helps keep the District's data secure in environments that would otherwise be a potential security concern. For example, Telecommunications has deployed wireless access points across all district locations to blanket the sites with Wi-Fi accessibility. Without encryption, any data transmitted wirelessly would be much easier for anyone with a wireless device to intercept.

All secure district systems require some form of authentication. Currently, APS does not have a central mechanism for authentication, so each system is authenticated separately. In some ways, that configuration is more secure because a username/password for one system doesn't necessarily get someone into another system. Unfortunately, a decentralized system is very challenging to manage because users and passwords for each system must be administered separately.

Password complexity policies are already used in many of APS' most sensitive systems. These policies determine how often password must change, how many characters a password must be, what types of characters a password must contain, and much more. The more complex a password is, the more difficult it is for someone or something to guess, but if it is too complex users will be unable to remember the password. Password complexity will become more important as the District centralizes its authentication because fewer passwords will mean that each password will be more valuable and consequently need to be more secure.

The majority of the network and data security systems are located in the District's IT center. All of the systems are managed, operated, and maintained by staff in Application Services, Telecommunication Services, and Technical Services.

7. What level of technology staff support is needed to assure the infrastructure/services identified above?

The current staffing level is as follows:

1. Telecommunications: 1 Manager, 3 Network Application Specialists
2. Technical Services: 1 Manager, 2 System Administrators, 7 Desktop Technicians
3. Help Desk: 3 Help Desk Technicians
4. Future demand is expected to necessitate 1 additional Help Desk Technician and at least one additional System Administrator within the next three years.

8. How does your infrastructure support communication and involvement of parents and community?

The District provides emergency and outreach communications with parents and community via the use of Connect-ED, an automated dialing system that is part of the Blackboard-Connect suite of products.
Student information is available to parents via the use of Parent Portal, which is a part of the Infinite Campus student information system.

• Information is available to the community via the District's website (www.aps.k12.co.us), as well as various e-mail groups maintained by the Communications Department. A daily "Media Monitoring" e-mail goes out to District employees and community members with a summary of news stories pertinent to APS and K-12 education in general.

9. What infrastructure/services are needed to support delivery of library information services?

Library Information Services
Aurora Public Schools uses the web-based, centralized library management system and textbook management system, Destiny, by Follett Software Company. The infrastructure needed to support this is a high-speed network that allows all school sites to simultaneously access the Destiny internet server and the SQL database server. The bandwidth must be sufficient to enable several hundred connections from school lookup stations as well as computers from homes. Student information is uploaded and updated from the student information system, Infinite Campus. Support is needed to make this process seamless and consistence.
Personnel and equipment are needed to support the hardware and software maintenance and upgrades.
School libraries must have sufficient computers and equipment for circulation, management, and electronic card catalog lookup stations.

Section F: Policies and Procedures

See Appendix F Below

Section G: Budget Description

The district is to provide a copy of the operating budget for each fiscal year covered under this plan. To the extent possible, identify existing and potential ET-IL funding sources, and annotate the operating budget line items to show how the district will fund the non-discount portion of E-rate requests. The budget should include estimates for expenditures on items such as infrastructure, hardware, software, consulting contracts, telecommunications services, staff, library infrastructure and professional development opportunities for all staff. It is the understanding that most district's will not have the ability to provide a three year operating budget, therefore CDE will request a copy of the operating budget in subsequent years.

Please note that any Title II-D formula or competitive funding is approved and managed through an official budget submission process via Colorado Department of Education Grants Fiscal Management. The budget description listed in this section is not an official request to the Department of Education.

Remember to address the following key components:

- Evidence of adequate budget to acquire and maintain infrastructure and services over the next three years.
- Identify existing and potential funding sources.
- Identify the E-rate eligible and non-eligible budget items
- Provide a funding source for E-rate eligible and non-eligible budget items
- Identify the funding source for the non-discounted portion of E-rate eligible budget items
- Provide a list of all anticipated technology purchases including expenditures for existing technology

Guiding Questions:

1. **Provide a budget narrative. Explain where E-rate eligible purchases are located.**

   Budget dollars for technology support come from four primary sources:

General Fund

For fiscal year 2008-09, the Division of Instruction included budgets for Instructional Technology support ($991,196), Library Media Services ($500,308) and District Technology service agreements ($1,035,111). In addition, the Division of Support Services included budgets for Information Technology Direction and non-instructional service agreements ($848,805), Telecommunications Services ($592,487), Application Services ($1,274,084) and Technical Services ($855,919).

In total, the District commits more than $200 per student in General Fund infrastructure and instructional technology support.

Building Fund (2008 Bond Proceeds)

The District committed $12,900,000 or 6%, of its 2008 bond ($215,000,000) to technology infrastructure upgrades.

- Technology equipment renewal ($7,500,000)

- LAN/WAN Infrastructure upgrades ($2,500,000)
- Phone system/PBX upgrades including Voice-over IP ($1,200,000)
- Applications upgrade ($1,700,000)

Technology Equipment Renewal ($7,500,000)

A change in philosophy occurred in 2008 to change from an emphasis on equity of outcome (a 4:1 student: computer ratio) to an emphasis on equity of funding ($45 per student per year for each school). The purpose of this change was two-fold:

1. To create a tighter alignment with schools' overall technology plans, and
2. To encourage schools to supplement bond expenditures with local funds.

To support the change in philosophy, the model for computer de-support was changed from being computer-specific (any computer exceeding the 4:1 ratio) to being model specific. Dell GX260 computers, for example, which were purchased in 2002 and 2003, were given a de-support date of June 30, 2010, at which time the District's Technical Services Department will no longer fix broken machines, and any District-licensed programs (with the exception of anti-virus software) must be removed from the de-supported machines.

- The District's Chief Information Officer (CIO) and Technical Services Manager meet with each site once a year to discuss PC replacement. The meeting is scheduled with the site Principal and other school staff as designated by the Principal. The annual process at each site includes a spreadsheet that details the school's technology inventory, a summary by computer model, a support schedule per model, a support "forecast" for the next seven years, a budget for current-year purchases and links to the District Warehouse pickup and delivery schedules.
- Computers that are identified for replacement are inventoried and scheduled for pick-up from the building. Old computers are picked up by recyclers one month after arrival of new computers.
- The 2008 bond does not address renewal of file servers and printers. These renewal cycles were addressed in the District's previous bond (2002), but cuts in the overall Technology budget in the 2008 bond dictated that file servers and printers be funded locally beginning in 2008. All site file servers will be replaced in 2009 (using remaining funding from the 2002 bond), so replacement of these servers will not need to be addressed again until approximately 2014. It is expected that the roughly $500,000 needed for server replacements will be paid for out of the Capital Reserve Fund at that time. Printer replacement will become the responsibility of individual school sites beginning in 2009.
- Beginning in 2009, student computing devices (i.e. netbook devices) will be allowable Building Fund expenditures. Given the rapidly-changing landscape for student devices, the District will break its computer renewal commitment into two pieces: A staff and computer lab component (replaced at a 6:1 student-to-computer ratio) and a student computing device component. Principals will be given more autonomy over the student computing device component and allowed to determine locally how best to meet their instructional needs with these bond proceeds.

LAN/WAN Infrastructure upgrades ($2,500,000)

The existing LAN/WAN infrastructure is sufficient to meet APS's current needs. However, demands on the network are steadily increasing and expected to increase exponentially over the next three-to-five years.

WAN

The Wide-Area Network transmits data via radio links at speeds ranging from 30Mbps to 310Mbps. Those speeds will need to increase significantly between now and 2014, which will necessitate a significant upgrade.

The District will use a combination of bond and mill levy proceeds (see below) to construct a fiber-based Wide-Area Network to meet these increasing bandwidth needs. The project, awarded to Unite Private Networks in February, 2009, will provide a "home run" to the IT Center from each of the District's 47 remote locations and will provide 1Gb speeds to all sites. After E-Rate reimbursement, the District will provide approximately 24% of the up-front cost of $3.75 million, paid over three years, or approximately $900,000 toward the project.

LAN

During the 2002 bond cycle, wireless Local-Area Networks were built into all of the District's school and support locations. However, the wireless LAN's were built to provide maximum coverage without significant saturation. As such, most locations within the District are only able to accommodate wireless access for about 10-15 computers concurrently. This will need to be upgraded in the future as the District broadens access to student computers and begins to implement targeted 1:1 initiatives.

Phone System/PBX Upgrades ($1,200,000)

The District last replaced its phone system in 1993, making the current system 15 years old. Fifteen years is a normal life span for phone equipment, and failure rates on the current hand sets are increasing as the fleet ages.

Also included in this project is a migration to Voice-over IP (VOIP), which will allow the District to transmit phone calls over the Wide-area Network and save money on third-party phone lines.

Applications Upgrades ($1,700,000)

This project will convert the District's applications to a "Service-Oriented Architecture" designed to improve business efficiency, internal collaboration and standardization. Phase 1 of the project will include conversions and upgrades to outdated modules, including network software, e-mail, facilities maintenance, human resources and payroll. Phase 2 of the project will include the purchase and implementation of "Service Bus" software to integrate the District's various business applications and create a common operating and reporting platform.

2008 Mill Levy Override

In addition to the 2008 bond, Aurora voters also approved a $14.7 million mill levy override in November, 2008. The mill included $1 million in "Instructional Technology Enhancements".

The mill proceeds will be used, first, to cover the approximately $450,000 in annual maintenance costs on the new Wide-Area Network (see above). After E-Rate reimbursement, the net cost to the District will be roughly $120,000. The remainder of the budget will be for additional e-Rate eligible infrastructure upgrades, as well as $750,000 for classroom technology hardware (student computing devices, Interactive White Boards, projectors, visualizers, etc.).

Capital Reserve

In addition to the sources listed above, the District has, contributed, historically, approximately $400,000 per year from the Capital Reserve Fund. These funds have been used for replacement of core server room equipment ($160K) and Instructional Technology equipment ($200K-$300K).

Due to other capital demands within the District, these budgets are not expected to continue at their historical levels over the next three years.

2. Please show clear evidence of the district's ability to maintain the infrastructure.

Using the end of its 2002 bond proceeds, the District will spend over $1,000,000 in calendar year 2009 toward core infrastructure upgrades, including electrical, air conditioning, UPS and fire suppression upgrades in its primary data center at the IT Center (82 Airport Blvd, Aurora, 80011), as well as a refresh of all 120+ servers. This commitment to infrastructure concerns, coupled with the budget narrative above, provide compelling evidence of the District's commitment to its technical infrastructure.

3. How will you coordinate ET-IL fund expenditures with funds available from other Federal, State, and local sources?

The Information Technology and Instructional Technology Departments work closely together and with school principals to evaluate the needs of Aurora Public School students. Consideration is given to all segments of the network and computing infrastructures as well as students' instructional needs. Additional Federal, State and local funds are directed into the classroom whenever possible. When significant funds become available from other sources, the District's Technology Steering Committee, made up of Chief-level representatives from around the District, will be consulted to make final determinations on coordinating these funds with ET-IL expenditures.

4. What are your funding sources for budget items?

See #1 above

5. Are there any particular funding challenges you may face over the next three years that impact your organization's ability to implement the ET-IL plan? If so, what are they?

Per above, *"Future demand is expected to necessitate 1 additional Desktop Technician and 1 additional Help Desk Technician within the next three years."* Given the current state of the U.S. economy, it appears unlikely that these needs will be met within the next 18-24 months. If not, it will likely result in the current staff struggling to keep up with Help Desk and Desktop call volume.

However, average response times have been strong, historically, for both of these operations (nearly immediate for the Help Desk and under three days for Desktop Technicians). Any increases in these response times will be a challenge for the District's user community, but not an unreasonable one.

6. Show clear evidence of the district's ability to fund the non-discounted portion of E-rate eligible items.

See #1 above.

Section H: Action Plan

Please see Appendix B – Goals...

Section I. ETIL Evaluation Plan (2009-2010)

Implementation of the ETIL plan is a continuous process that adapts to the organization's changing circumstances and includes ongoing evaluation. Effective evaluation forces planners to rethink and adapt objectives, priorities, and strategies as implementation proceeds. Continuous evaluation also facilitates making changes if aspects of the plan are not working.

Evaluation is effective when it:

- Is directly tied to goals and strategies
- Is measurable
- Contains baseline data
- Contains benchmarks
- Is conducted annually
- Considers quality, quantity, and impact

In order to adequately evaluate the effectiveness of the ETIL plan at the district and school levels, an evaluation planning process has been developed that includes:

- Formation of an ETIL steering committee headed by the director of instructional technology to oversee the evaluation of the plan.
- Annual review
    - Formal surveys and anecdotal feedback on progress of ETIL plan
    - Examination of data (student achievement results, increase in capacity, measurement of resource access, etc.)
    - Schools evaluating the success of students in meeting their ETIL proficiencies based on progress towards benchmarks.
    - A yearly status report on the implementation of the plan
- Ongoing reviews
    - Evaluation of the ETIL portions of schools' School Improvement Plans
    - School visits by members of the instructional technology department
    - Participant evaluations of all formal professional development offerings

1. What performance measures have you incorporated into your plan to determine whether your ET-IL implementation and investments have been effective in achieving your districts objectives?

The table below reflects all of the measurable outcomes identified within the ET-IL evaluation plan. All outcomes were identified from descriptions provided in part B – goals. Please note that the outcomes presented do not represent a comprehensive list of all outcomes that may be measured. Instead, what is presented represents the primary objectives associated with the formative and summative evaluation of the effectiveness of the described ET-IL plans that will be assessed.

Indicator Outcome	Objective	Data Collected	Evaluation Tool
IT staff will increase participation in curriculum adoption processes	Increase the percentage of curriculum adoption meetings that IT staff participate in.	Attendance data from district curriculum adoption meetings.	Participation check sheet that identifies IT staff that attended curriculum adoption meetings.
Increased student participation in technology literacy courses completed in MS and HS	Increase the percentage of student participation from baseline levels by 10% annually	Technology class rosters along with membership data; calculate % of membership participating in such courses by level.	Infinite Campus to obtain membership counts and counts of students participating in identified technical literacy courses.
All middle school students will participate in a technology literacy course	100% participation in technology literacy courses prior to 9th grade	Student technology literacy course participation data	Infinite Campus course and student information to determine percentage of student participation.
Increase library technology utilization	Increase utilization rates of acquired collections by students and staff.	Monitor use rates of acquired materials following implementation of new technical resources	Internal monitoring of resources by library staff.
Increase professional development for library staff	Increase professional development opportunities for library staff	Pre-post surveys of available technologies (including use by staff)	Survey tool to be developed by Accountability & Research in conjunction with Instructional Technology staff
Increased communication with stakeholders regarding ETIL plans	Increase communications regarding ETIL plans.	Count of school and district media releases that inform stakeholders of ETIL plans.	Collect 09-10 baseline data regarding communications with stakeholders related to ETIL plans. For Year 2, increase communications by 10%.
All schools include an instructional literacy goal as part of their school improvement plan (SIP)	Explicit and measurable instructional literacy goal presented in the SIP of all schools.	SIP plans; specifically, the determination that literacy goals are presented.	Internal monitoring of SIP for confirmation of presence of literacy goals.
Increase in number of school sites requesting IT grant funds to support their school improvement plan goals.	Have all district schools actively planning technical literacy goals as evidence from grant requests.	Count of grant requests received by IT from district schools.	Internal monitoring of grant requests received from school sites.

Increased ETIL coaching support to classroom teachers.	Increase support opportunities and instructional time to classroom teachers.	Count of sessions offered, hours of instruction, and numbers of teachers receiving coaching support.	Internal monitoring of coaching support, time and opportunities.
Provide for credit technology integration classes for teachers at school sites and computer labs	Increase number of courses that provide credit for technology integration.	Number of classes offered and number of teachers receiving training.	Internal monitoring of credit technology classes including participation rates and availability
Provide ETIL training to school administrators, district instructional coordinators, and district content coaches.	Increase availability of ETIL training to district administrators	Number and percent of school administrators participating in ETIL training	Internal monitoring of ETIL classes offered to administrators along with participation rates.
Every new teacher hired in APS will participate in a half day technology class.	Full-participation by all new teachers in technology class	Percentage of new teachers participating in training	HR records and course participant lists to verify participation rates by new teachers.
Create a series of follow up classes that align with the teacher induction program	Design and implement technology follow-up classes	Course information to verify alignment with teacher induction program	Verify outcomes via technology class records of follow up
Follow-up survey for new teachers on effectiveness of training received from IT staff.	High course effectiveness as indicated by agreement rates exceeding 70%	Licensed Staff Survey questions designed as part of the teacher induction items.	Licensed Staff Survey; monitor questions related to training effectiveness.
Computer renewal program will be maintained to ensure all district computers are no older than 7 years.	100% of computers utilized within classrooms are seven years or less in age.	Computer Inventory Information	Verify age of computers and work to ensure all computers are contemporary and fit to serve as instructional technology
All classrooms in the district will have a projection system.	100% of APS classrooms to include projection systems	Classroom and school inventory information	Verify the presence of projection systems in classrooms throughout the district
Sixty percent of our classrooms will have interactive white board technology	Increase white board technology availability in all district schools to reach and/or exceed the 60% threshold.	Classroom and school inventory information	Verify that the 60% threshold is met or exceeded across the district.
Increase the number of student notebooks/laptops to	Increase notebook/laptops availability	Classroom and school inventory information	Inventory lists of laptops and notebooks utilized by schools.

utilize in school			
Increase the number of user access log-in for district resource database (One Place)	Increase student log-ins to Discovery One Place by 25% from current year (i.e., to 15,000 logins next year)	One Place log-in information	Internal monitoring of One Place usage by district staff
Increase the usage of web 2.0 technologies (word press) for administrative purposes, classroom instruction and student learning.	Increase by 10% the number of teachers utilizing technology (i.e., from 500 teachers currently).	Word press log-in and usage information	--
All schools will utilize a volunteer tracking program to monitor parent and community involvement	Incorporate the use of PTO manager into all district schools	PTO manager log-ins by school	PTO Manager software
Increase the numbers of parents/guardians usage of APS' student information system (Infinite Campus Parent Portal)	Increase on an annual basis the number of parent log-ins to IC parent portal	Parent Portal log-ins by school	--
APS employees will annually read the acceptable use policy and sign-off indicating understanding	100% sign-off by APS employees indicating understanding of policy.	Link rate of return with employee lists.	Acceptable use consent forms
APS students will annually read the acceptable use policy and sign-off indicating understanding.	100% sign-off by APS students indicating understanding of policy.	Link rate of return with student membership.	Acceptable use consent forms
Evidence of student literacy growth via comparison of "high" and "low" technology classrooms.	Higher achievement performance as assessed by comparisons of "high" and "low" technology classrooms	CSAP reading and writing growth percentiles; proficiency levels of students; index ratings of classroom technology availability	Standardized data and school/classroom technology availability.

2. How often will you evaluate progress on your districts plan?

The Aurora Public Schools evaluation plan will be monitored on a quarterly basis during the academic year. This will allow us to track our progress in reaching the indicated outcomes in the aforementioned plan (i.e., formative information). It will also allow us to follow-up on any implementation deficiencies to ensure that our identified outcomes are achieved. Also, a summative evaluation of ET-IL implementation effectiveness will be prepared on an annual basis following the completion of the academic year.

3. Who will be responsible for completing/overseeing the evaluation process?

The Division of Accountability and Research in conjunction with the Division of Instruction within the Aurora Public Schools will be responsible for overseeing the ET-IL evaluation process. Currently, the Division of Accountability and Research has two persons that have extensive experience with program evaluation. Lisa Escarcega, PhD and Dan Jorgensen, MA have both supported the development and interpretation of evaluation plans in regards to curriculum, grant funding, and other special programs. In addition, centralized data reporting systems will contribute to the reporting of the data elements specified within our evaluation plans.

4. Show evidence that you have evaluated your districts previous plan and include the key points or findings of this evaluation in your new plan.

A large component of our previous evaluation plan involved the collection of baseline data to monitor ETIL implementation on an annual basis. The obtained data helped define the scope and fidelity of implementation of the previous ETIL framework. Furthermore, the obtained data has been included within the scope of the current evaluation to monitor the meaningfulness and degree of any observed changes. Key baseline data includes, but is not limited to the following:

- 36% of eight graders scored at proficiency or above on an 8th grade literacy assessment administered in the spring of 2008,
- 100 additional netbooks/laptops were incorporated into classroom instruction (making the total number approximate.....),
- During the current school year nearly 9,000 staff and teacher connections to Discovery one-place occurred and over 12,000 for students,
- Nearly 500 teachers have created a blog account through a district supported word press server
- The parent web portal had over 84,000 log-ins during the course of the current school year.
- Network utilization of resources by APS students approximates 6 Kbps which approximates the current national average
- Technology course participation approximated ..... students during the 0 – 0 school year.

5. Does your plan include evaluation of student assessment data?

Our ET-IL evaluation incorporates student assessment data to provide an achievement measure linked to the potential effectiveness of the ET-IL plan. Currently, our proposed plan will examine change in CSAP reading

and writing performance for students that were enrolled in "high" technology classrooms as compared to students enrolled in "low" technology classrooms. The analysis will involve the statistical control of participant characteristics that could potentially impact the validity of our findings. Similarly, additional research may include analysis of student growth percentiles.

6. How will you evaluate the technology infrastructure and telecommunication services in your district?

Although not subject to formal Service-Level Agreements, technology infrastructure and telecommunications services will be evaluated based on:

1) Availability
2) Performance

Expectations are for availability to approach 100% during regular school hours (99.999%) and in excess of 99% during off hours. Performance is monitored at all layers of the District's network with an expectation that bandwidth will be at or near the national average.

Currently, the District has Internet bandwidth of approximately 6.6Kb/second/student, which is slightly above the national average and well above the average for school districts in Colorado. As demands increase in the coming year, a combination of monitoring tools and anecdotal data from users will help to determine when bandwidth will need to be increased.

APPENDIX

NOTE: The following pages correspond to the above sections as appropriate. (e.g. Section A to Appendix A, etc.)

APPENDIX B - Goals, Objectives, and Strategies for ETIL

Goal 1: Integrate educational technology and information literacy into curriculum and instruction to increase student achievement and meet district, state, and national standards.				
Objectives: A. Align district supported ETIL resources with existing and new continua as it is adopted				
Strategies:	Timeline			Responsible Parties
	2009	2010	2011	
1. Instructional Technology Staff will participate in curriculum adoption processes to provide support and guidance for ETIL.	X	X	X	Division of Instruction
2. All content areas will identify and integrate technology in their curriculum adoption to ensure alignment with state standards and ETIL standards.	X	X	X	Division of Instruction
3. Increase the usage of web 2.0 technologies for instructional resources, classroom instruction and student learning.	X	X	X	Division of Instruction
4. Ongoing communication of the ETIL plan to all stakeholders.	X	X	X	Division of Instruction
B. Integrate student ETIL profiles for K-8 grade level designated benchmarks.				
1. Adopt the National Educational Technology Standard Profiles for Technology Literate students.	X	X	X	
2. Align NETS Profiles to the K-8 standards framework.	X	X	X	
3. Incorporate the profiles into instructional resources/curriculum decision making and planning.	X	X	X	
C. Ensure that every student is technologically literate by the time students finish 8th grade.				
1. Communicate and promote to instructional staff the adopted K-8 ETIL skills framework to assist staff and students to understand what students need to know by the end of 8th grade.	X	X	X	Division of Instruction; School sites.
2. Create a middle school technology course which every student takes to ensure they are technology literate and receive key instruction prior to high school.	X			Division of Instruction; School sites.
3. Measure students technology literacy through the courses completed in elementary and middle school	X	X	X	Division of Instruction; School sites.
4. Create an additional 6th – 8th Grade ETIL framework for each grade level that	X	X	X	Division of Instruction; School

integrates technology projects and Web 2.0 skills with content standards and expectations				sites.
D. School sites will review and revise Instructional Technology Goals annually for their School Improvement Plans (SIP)				
1. Previous school year SIP will be evaluated for effectiveness and overall implementation of Instructional Technology Goals.	X	X	X	Division of Instruction; Division of Accountability and Research; School Sites
2. Every school will create an instructional technology goal as part of their school improvement plan.	X	X	X	Division of Instruction; Division of Accountability and Research; School Sites
3. School sites will be invited to write a grant funded by Instructional Technology that will support their school improvement plan goal.	X	X	X	Division of Instruction, School Sites, Division of Grants

Goal 1 Narrative:

A. Align district supported ETIL resources with existing and new continua as it is adopted.

Instructional Technology Staff participate in curriculum adoption processes and ongoing discussions regarding curriculum revisions. Instructional programs are aligned with technologies that support the implementation of the curriculum or the process. Instructional Technology is aligned under the Division of Instruction which ensures there is constant and ongoing communication focused on instruction, curriculum and effective integration. Web 2.0 technology and a potential content management system (Blackboard, Moodle, etc.) will be utilized to assist teachers in creating web-based content to support student learning.

B. Integrate student ETIL profiles for K-8 grade level designated benchmarks.

APS has adopted the most current version of the National Educational Technology Standards for Students. The standards were created by the International Society for Technology in Education (ISTE). Aurora Public Schools believes that all students should acquire the necessary skills to be productive in the global world. Students must meet these standards in order to be technology literate. Benchmarks for each grade level were created based on the NETS. The benchmarks provide a starting point to assist instructional staff in their planning for instruction and ensuring students are learning key technology skills and standards. The NETS Technology Literate Student Profiles will assist instructional staff in ensuring the key technology skills are demonstrated by students.

C. Ensure that every student is technologically literate by the time students finish 8th grade.

APS believes technology literacy is when **Technologically literate learners** master the skills that are essential to everyday life and workplace productivity. These learners can identify information needs; identify, select and apply appropriate technological tools and methods to solve problems; gather, manage, and analyze data; and communicate ideas effectively and ethically as a natural part of the learning process across the curriculum. During the 2007-8 school year, a group of instructional technology administrators and leaders from six Colorado school districts, assisted by district assessment directors and an instructional technology consultant, formed a consortium to address their districts' common need for an 8th grade technology literacy assessment to administer in the spring of 2008. This assessment was utilized in the spring of 2008 and 36% of the eighth graders measured scored at proficiency or above. For the 2008-2009 school year APS has determined that

students enrolled in technology courses in middle schools and receiving passing grades as being technology literate. The number of students who meet the criteria will be counted in our results for this year. The development of a common middle school course will assist in ensuring students are technology literate.

D. School sites will review and revise Instructional Technology Goals annually for their School Improvement Plans (SIP)

Incorporating a specific goal for instructional technology into SIP has been a very effective way to ensure all sites are responsible for implementing 21st Century Learning into classrooms. This goal must align with the content area goals and it must be specific and measureable focused on instruction and what the school wants to accomplish. Technology is used as tool to assist school sites reach their goals rather than a list of technology tools the school wants to acquire for their classrooms. Each goal is monitored through the year and school sites are eligible to write for competitive grants to support their school improvement grant. Instructional Technology awarded over $300,000 in funds to school sites for the 2008-2009 school year. This competitive grant process will be used to distribute the $1,000,000 mill dollar funds passed in the 2008-2009 school year.